Synth Controller manual Addendum for Edition 'EsiGranulizer 2.0'
for Emu Esi Sampler

In August 2025, the Granulizer was updated to version 2.0. It now allows you to automatically cycle through the sample without turning the START knob. With adjustable speed, direction and end point – one shot or looped.

This edition was developed on an Emu Esi 4000. If your sampler supports the feature of modulating Sample Start by Velocity, it's quite likely the Granulizer also well do for your sampler. It will work on the MPC One e.g.

This manual does not focus on mapping samples to keys or defining preset keyboard zones on the Esi itself. We somehow suspect noone ever had understood both completely ;-)

The Emu ESIs do not understand any SysEx

By factory the EMU ESIs have no built in SysEx editing capabilities like most synthesizers. Means: no editing of envelopes, LFO or other things. But the ESI allows some realtime modulations by CC and modulation of the Sample Start time by velocity – this is what the Granulaizer Controller will make use of.

Features of the EsiGranulizer edition?

- Your old ESI will mutate into kind of funny Granular sampler
- travel any sample in the speed and direction of your choice or freeze it completely
- Seeding frequency and length for the grains freely adjustable between 0-127
- Seeding can be synchronized to midiclock
- randomization of seeding position inside the sample. If your sample is e.g. a voice saying something, your ESI starts to talk endless nonsense in weird stuttering
- the whole thing works polyphonically, either for playing granulized chords or – after you've set the sample in **PRESET/DYNAMIC PROCESSING/7 KEYBOARD MODE** to **Nontranspose** – for making the sound more dense.
- 5 knobs for direct access to VCF Cutoff, Note-On Q, VCA Level, VCA Panning and Pressure. Pressure can be assigned to e.g. Crossfade (PRI & SEC Sample), LFO Modulations or Attack Time in the ESI's matrix.
- Pitchbend-knob for tuning the sample from the controller. The tuning width is dependent on **PRESET DEFINITION / 7 Pitch Bend Range**
- **New in Version 2.0: AUTORUN for automatic cycling through the sample**

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What is technically going on in the EsiGranulizer Edition?

The edition makes use of mapping **VELOCITY TO** in **PRESET/DYNAMIC PROCESSING/6** to **Sample Start**. While the Granulizer is ON you can send a note into the Controller's MIDI IN and the Granulizer will fire lots and lots of very short notes of this note to the ESI. Before sending them out, the Controller replaces velocity of the MIDI data with the value of the SAMPLE POSITION knob (or the calculated playhead position) – allowing to travel the sample with a knob.

What needs to be set up on the ESI itself?

Two essential things:

1. the midi channel of the ESI in **MASTER GLOBAL/ 9 MIDI / 2 MIDI Globals** and the Synth Controller need to be identical (see next chapter on how to learn the midichannel of the Controller)

2. For your Preset Keyboard-Zone, you need to set **DYNAMIC PROCESSING / 6 Velocity** to **Sample Start: 100%.**

Now all parameters apart from the blue ones should work.

The blue parameters address the other modulation possibilities of ESI's realtime mod matrix. For them to do anything, you need to assign the right CC-Numbers to the right realtime slots. The Midi settings are stored in the ESI when exiting the menu and only need to be adjusted once.

The complete list:

MASTER GLOBAL/ 9 MIDI / 2 MIDI Globals

- Basic Channel: this channel must be the same as the Synth Controller itself is using. Data on other midichannels are passed through the Controller unchanged.
- Mod Control: 1
- Pressure Control: chp (=channel pressure)
- Pedal Control: 4
- MIDI A Control: 21
- MIDI B Control: 22

Your Preset's used Keyboard-Zone should have the following setup:

- **PRESET DEFINITION / 0 Realtime Controls**:
  - 2 Mod Control → 2 VCF Cutoff
  - 3 Pressure Control → freie Wahl
  - 4 Pedal Control → 10 VCF NoteOn Q
  - 5 MIDI A Control → 3 VCA Level

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    - 6 MIDI B Control → 7 Pan
- **DYNAMIC PROCESSING / 2 VCA**
    - Level: 0%
    - Pan: -100%
- **DYNAMIC PROCESSING / 3 VCF**
    - Cutoff should be set to almost or completely closed. The knob can only increase the cutoff
    - Q: can be left to 0%
- **DYNAMIC PROCESSING / 6 Velocity to / Seite 3**
    - Sample Start : -100%

Learn Midi Channel on the Synth Controller

To learn a new global Channel for the Controller:

- Hold button 1 and 2 for 2 seconds until they start to blink, lift your fingers
- now send a note on your desired channel into the Controller's MIDI IN
- the Controller writes the new channel into it's memory and restarts. The channel is saved and will be recalled on next startup.

Some useful hints for choosing the right samples

If you map one sample across multiple keys or many samples on individual keys is perfectly up to you. Important is the keyboard zone of the Preset which is defined in **PRESET DEFINITION / 2 EDIT ASSIGNMENT**. This is the zone where you should setup the above parameters. All samples inside this keyboard zone will be able to make use of the granulizer.

Your sample should be sth between 2 and 20 seconds. For very short samples like drumsounds, the granulizing makes not so much sense. Quite promising are text passages, nature atmos or recorded chord progressions you can then travel through.

The resolution of Midi velocity is technically limited to 128 steps. This means your sample will always be chopped into 127 pieces (assuming VELOCITY TO is set to 100% steht). If your sample is 127 seconds long you would only be able to travel the sample in 1 second steps.

Quite important for the overall sound are **VCA Parameter Attack** and **Release.** A littlebit of Attack can make the grains sound less harsh, 1-3 seconds Release make grains appear longer than they essentially are and allow to fire at higher rate because identical notes unfortunately cut each other off.

Do not forget the ESI offers a primary and a secondary sample being played (and granulized) at the same time and – ! - they can be crossfaded in realtime with e.g. the PRESSURE. This might lead to interesting results. For crossfading you need to setup the following:

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- in **PRESET DEFINITION / 0 REALTIME CONTROLS** set the source **3 Pressure Control** to **9 Crossfade**
- in **PRESET DEFINITION / 5 CROSSFADE/SWITCH** set the zone to **Realtime Crossfade**

The three button's functions

First button: switch the Granulizer ON and OFF. In OFF state the Controller simply forwards all Midi data coming in to allow easy setup of the ESI. The ESI should behave as if no Granulizer is connected at all. The LED shortly blinks to indicate a sign of life.

If you switch the Granulizer on, the LED stays red and incoming notes on the leartn base channel will be processed with the granulizing function.

Second button: here you can choose whether the grains are fired synchronously with the MIDI clock or freely. When the LED is lit, the green markings on the panel do have a function.

Third button: the LED indicates grains to be currently fired. Pressing the button RESETs the granulizer.

GRAINS parameters

- FREQUENCY - the frequency at which notes are fired. The further the knob is turned to the right, the higher the frequency. It is limited by the length of the grain, as only one grain per note can be active at a time.

- LENGTH – the duration of a grain. The further the control is turned to the left, the shorter the grain and the higher the maximum achievable frequency can be.

Caution with FREQUENCY

With extremely short grains and extremely high frequencies, a sudden level jump can occur. In this constellation, the ESI goes into a strange sound smearing mode and becomes quite loud in a jumpy manner. However, what can then be heard sounds too interesting for us to want to withhold it from the user. We don't know exactly what happens technically either. Most likely, the ESI is fed NOTE ON commands faster than it can turn off the notes, resulting in an (un)fortunate event that should not occur: multiple notes of the same key are triggered.

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POSITION parameters

- OFF MODE POSITION SOURCE - When the Granulizer is OFF, incoming notes are forwarded to the ESI. This switch determined which source should be used to set the SAMPLE START POINT
    - VELOCITY - incoming notes should retain their regular velocity. The harder you press on the keyboard, the later you start the payback position inside the sample.
    - START KNOB - the Synth Controller will replace the velocity with the POSITION / START control. This allows you to set the sample position for played notes even when the Granulizer is switched off.
- AUTORUN – there are three positions:
    - STOPPED / yellow – In this position, the red controls have no function. You can manually run through the sample by turning the START knob. With the RANDOMIZER, you can increasingly vary the starting point at random.
    - ONE SHOT / red – In this position the (yellow) RANDOMIZER is inactive. When you press a keyboard key, the sample is played from START to END at the set SPEED. If END is before START, the sample plays backwards. When END is reached, the sample stops at that point.
    - LOOPED /red – Same as ONE SHOT, but after reaching END, the position jumps back to START and continues running.
- SPEED – Speed at which you travel from START to END. Only active in the AUTORUN modes ONE SHOT and LOOPED.
- RANDOMIZER – Allows random variation of the START point. Only active in AUTORUN mode STOPPED..
- START – Sets the sample start point for the AUTORUN modes ONE SHOT and LOOPED. In STOPPED mode, this can be used to manually scroll through the sample.
- END – Sets the loop end point in the AUTORUN modes ONE SHOT and LOOPED. If it is before the START point, the sample plays backwards.

MIDI Parameters

- NOTE SYNC – only active while SYNC TO MIDICLOCK is on. This knob is another switch:
    - AUTO - the notes are automatically set to the first beat of the synchronisation, regardless of the timing with which you pressed the note on the keyboard. If DIVIDER is set to 4, for example, your grains will always

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be synchronised to 1.

    - FREE - the timing of your key press remains constant within the synchronisation. If GRAIN FREQUENCY is set to 4, for example, and you press the key on the second beat, the grains will always start on the 2 and not on the 1. This allows you to play offbeats, for example.

- DIVIDER - Only active when SYNC TO MIDICLOCK is on. Allows you to set the timing between half notes and 32nd notes. The T indicates that the timing is based on triplets.

When switching between SYNC TO MIDICLOCK, NOTE SYNC or synced frequency, you might want to restart the sequencer/DAW once to clearly reset the clock to 0.

CC Remoting

The most important parameters can also be remotely controlled via Control Change; the numbers are listed next to each parameter. The START position can be remotely controlled via CC No. 16 in the DAW, for example. The first four blue controls can also be remotely controlled via CC.

Granulizer on Akai MPC

The Granulizer can also be used with an MPC. The parameters are located in a different place on the MPC. Here is a list of what needs to be set and where:

I. PREFS – MIDI
    - MPC input; CONTROL must be ON for the MPC to respond to the MIDI CC data from the Granilizer, which is mapped in Section III

II. PROGRAM EDIT
    - track must be a KEYGROUP
    - GLOBAL – SAMPLE PLAY – NOTE ON
    - AMP ENV: A D R ca. 15ms, S auf 127
    - UTILITIES: adjust your desired Pitchbend range
    - SENSITIVITY: VELO to AMP auf 0
    - MOD MATRIX: SOURCE: MIDI / VELO ... TARGET: GLOBAL / PLAY OFFSET
    - Important: SAMPLE SCREEN – the sample endpoint must be moved close to the beginning so that the Granulizer POSITION button runs through the entire sample

III. MIDI LEARN (in MENU screen)
    - Mapping CUTOFF, Q, PAN, and VOLUME to the Granulizer's controls

The above setup, with PLAY OFFSET and an offset SAMPLE END point, is a workaround for MPC firmware 3.x. The previous settings for MPC firmware 2.x, which used

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VELOCITY to control the SAMPLE START POSITION, apparently no longer work with MPC firmware 3.x.

There is also a youtube demo for this setup: https://youtu.be/NfTWHe-WTMo

FAQ

There is no sound

- Do you hear sampleplaying while the Granulizer is OFF? If not, the problem is most probably not the Granulizer.
- Are midi channels of ESI and Synth Controller identical?
- Are you working on the right Keyboard-Zone (**PRESET DEFINITION/2 Edit Assignment**)?
- Is there any sample assigned to the keys you are pressing?
- Maybe VCF Cutoff or VCA LEVEL are turned down?
- Play with SAMPLE POSITION, maybe your sample is standing on a POSITION without sound.

The Granulaizer is freaking out, does not react, hanging notes

- the ESI does an ALL NOTES OFF when pressing it's TRANSPOSE key
- press the 1st button to switch the granulizer OFF and ON again, it will be resettet when switching it ON.

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